 **Introduction to Cranial Nerves**

Dr. Bennett-Clarke

Cranial Nerves

12 Pair

CN I Olfactory

CN II Optic

CN III Oculomotor

CN IV Trochlear

CN V Trigeminal

-Opthalmic

-Maxillary

-Mandibular

CN VI Abducens

CN VII Facial

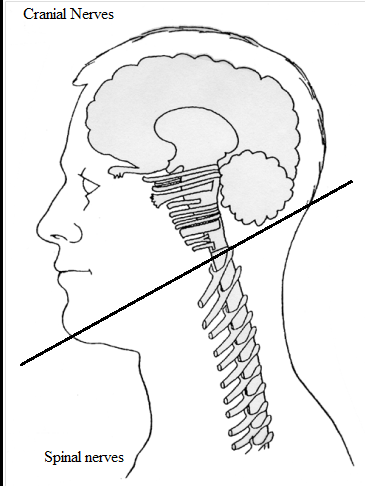
CN VIII Vestibulochoclear

CN IX Glossopharyngeal

CN X Vagus

CN XI Accessory

CN XII Hypoglossal

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**Cranial nerves**

From brain

12 Pairs

Go through named openings

Are Mixed, Sensory Only, Motor Only

No sympathetic

Parasympathetic CN III, VII, IX, & X

**Functional Components of Typical Spinal nerve**

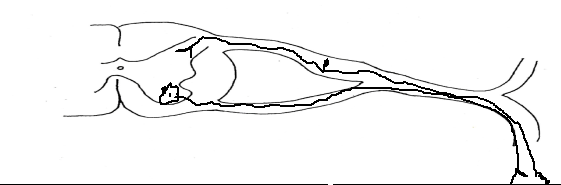
From Spinal Cord

31 Pairs

Most go through Intervertebral Foramina

Are All mixed (Except C1 = all motor)

Sympathetics = T1 – L2



Cranial Nerve Components:

Somatic Afferent = Pain, Temperature, & Touch & Associated with Dorsal Root Ganglia

Somatic Efferent = To skeletal muscle of head and neck

Visceral Afferent = from mucous membranes

Visceral Efferent = Preganglionic fibers exit brainstem as cranial nerve into autonomic (Parasympathetic) ganglia then postganglionic fibers go to target

* CN III, VII, IX, & X

**Functional components for Cranial nerves**

Possible **Efferent** components

1. General somatic efferent- (GSE) = skeletal muscle

These neuronal cell bodies and fibers supply muscles of the head, neck, body wall and extremities that arise from myotomes associated with embryonic somites.

2. Special visceral efferent- (SVE) = skeletal muscle

These neuronal cell bodies and fibers supply skeletal muscles of the head and neck body wall and extremities that arise pharyngeal arches.

3. General visceral efferent- (GVE) = parasympathetic

These neuronal cell bodies and fibers supply smooth muscle, cardiac muscle and glands.

Possible **Afferent** components

1. General somatic afferent- (GSA)

These neuronal cell bodies and fibers convey information about pain, touch, temperature and proprioception from the skin and structures of the head, neck and body.

2. General visceral afferent- (GVA)

These neuronal cell bodies and fibers convey sensory information from viscera (organs, blood vessels, etc.)

3. Special somatic afferent- (SSA)

These neuronal cell bodies and fibers convey information about the special senses of vision, hearing or balance.

4. Special visceral afferent- (SVA)

These neuronal cell bodies and fibers convey information about the special senses of smell and taste.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Motor |  |  | Sensory |  | Special | Special |
| Nerve | Skeletal Muscle (Not from arch) = myotome | Skeletal Muscle (Pharyngeal Arch) | Smooth muscle & Glands | Pain, Touch, or Temperature = Somatic | Pain from organs or mucous membranes = Visceral | Special (smell, taste) | Special (Vision, hearing, balance) |
| CNI - Olfactory | x | x | x | x | x | Smell | x |
| CN II - Optic | x | x | x | x | x | x | Vision |
| CN III - Occulomotor | Superior rectus, Inferior Rectus, Medial rectus, inferior oblique, & Muscle of upper eyelid (Levator Palpebrae Superioris) | x | Pupillary Sphinctor (Constrict pupil) & Cilliary Muscle (Near Vision) | x | x | x | x |
| CN IV - Trochlear | Superior Oblique Muscle | x | x | x | x | x | x |
| CN V - Trigeminal |  |  |  |  |  |  |  |
| V1 - Opthalmic | x | x | x | Skin, Forehead, Upper eyelid, Dorsum of nose, nasal cavity, Cornea, & Sclera of eye | x | x | x |
| V2 - Maxillary | x | x | x | Skin of lower eyelid, cheek, lateral nose, upper lip, upper teeth and gums, & nasal cavity | x | x | x |
| V3 - Mandibular | x | Muscles of mastication & anterior belly of digastrics, mylohyoid, & tensor tympani and tensor veli palatini | x | Skin of lower lip, chin, bit of cheek, Lower teeth and gums, part of tongue, Part of oral cavity, & Meninges | x | x | x |
| CN VI - Abducens | Lateral rectus | x | x | x | x | x | x |
| CN VII - Facial | x | Muscles of facial expression, posterior belly of digastrics, stylohyoid, & stapedius | Lacrimal gland & mucous glands of nasal cavity and palate  Submandibular & Sublingual gland | Skin of posterior aspect of ear | x | Taste Anterior 2/3 of tongue | x |
| CN VIII - Vestibulocochlear | x | x | x | x | x | x | Hearing & Balance |
| CN IX - Glossopharyngeal | x | Stylopharyngeus | Parotid gland | Middle ear internal tympanic membrane, Mucous membrane of pharynx, Posterior tongue, & Carotid body & Sinus | x | Taste on Posterior 1/3 of tongue | x |
| CN X - Vagus | x | Skeletal muscles of soft palate, pharyngeal wall, & larynx | Organs of the Thorax & Abdomen  Mucous glands lining pharynx & Larynx | Ear & External Acoustic Meatus | From organs  From mucous membrane of larynx | Taste from Epiglotis | x |
| CN XI – Accessory (Spinal part) | SCM & Trapezius | x | x | x | x | x | x |
| CN XII - Hypoglossal | Intrinsic & Extrinsic muscles of the tongue | x | x | x | x | x | x |

